

7th, Ia., Minn., Conn., Ind. 8th, Dak., Ia., Wis., Ill. 9th, Ia., Ill., Ohio., N. Y. 10th, Ohio, N. Y., Me., Ind., Neb. 11th, Ia., Mo., Ind., Ohio. 12th, Cal., Dak., Ia., Mo. 13th, Ia. 15th, Ohio, Conn., Ill., Neb., N. Y. 17th, Ia. Ohio, Mass., Neb., N. C. 18th, Ia., N. C., Mass., N. J. 19th, Ia. N. Y. 20th, Ia., Tenn. 21st, Nev., Dak., Ia., Minn., Ohio, Ind. 22nd, Fla., Ia., Ohio. 23rd, Tex., Fla., Ia. 24th, Nev., Ia. 25th, Mich., Ohio, Ind. 26th, Cal., Utah, N. C., Nev., N. J., Penn. 27th, Utah, Nev., Ia., Tenn., Cal., Ind., Me. 28th, Ohio, Dak. 29th, Dak., Ia., N. Y., N. J. 30th, Tex., Ia., Wis., Ill., Mich., N. Y. 31st, Fla., Ala., Ia., Ga.

Lunar Holo.—1st, N. Y., Ill., Va., Mass. 2nd, Iowa, Minn., Mo. 3rd, Utah, Kan., Tex., N. C., Va. 4th, Dak., Tex., Ohio, Ill., N. C., Me., Cal., Ind., Md. 5th, Tex., Ala., Fla., Iowa, Ohio, Ky., Ill., Tenn., Ind., Penn., Va. 6th, Mo., Ohio, Va. 8th, Mich. 9th, Mich. 11th, Tex. 14th, Ohio, Ind. 23rd, Mo. 24th, Nev., Tex., Tenn., Ind., Ill. 26th, Nev., Iowa, Ill., Mass., Mo., Tex. 27th, Dak., Fla., Iowa, Mo., Ky., Ill., Ind., Ohio. 28th, Ind. Ty., Dak., Minn., Tenn., Ga., N. C., N. J., R. I., Mass., Ill., Mich., Neb., N. Y. 29th, Tex., Tenn., Ga., Ill., Mich., N. J., Va. 30th, Tex., Ala., La., Mo., Ind., Ga., Me., Mass., N. J. 31st, Tex., Ala., Fla., Mo., Ga., Conn., Mass., Penn.

MISCELLANEOUS PHENOMENA.

BOTANICAL.—*Connecticut*—Southington, in bloom, 8th, sugar maple, 14th cherry. 18th, pear, apple; New London, in bloom, 10th, wistaria, 12th, lilac, 14th, horsechestnut, maple, elm. *Georgia*—Thomasville, a dry month; oats and wheat all harvested, average crop. Cotton caterpillar observed in three cases in Thomas County during the month. *Illinois*—Louisville, corn, oats and flax one month later: Peorio, in bloom, 6th, wild cherry; Highland, 14th, first ripe strawberries; 18th, grape vines in bloom; 29th, cut worms damaging corn; 31st, wheat looks poorly. *Indiana*—St. Meinrad, 20th, grapes in bloom, Arlington, in bloom, 2nd, hickory, 19th, walnut, 24th, red and white clover. *Indian Territory*—Fort Gibson, 18th, new irish potatoes in market. *Iowa*—Nora Springs, in bloom, 2nd, cherry, 17th, mandrake. Monticello, 1st, catkins on willow; 12th, farmers commenced cultivating corn: in bloom, 4th, cherry, 11th, lilac, 13th, snowball, showberry. Independence, ripe, 7th, strawberry, 24th, potatoes, 26th, raspberry. Fort Madison, in bloom, 18th, strawberry, black walnut, 7th, locust; 19th, ripe strawberries in market. Prof. Gustavus Hinrichs, of the Iowa Weather Service, reported crops at end of month much better than apprehended during the drought of first part of month; corn, equal or above average over two-thirds of state, below average in southwest and northeast; hay and pasture good in northwest and middle portions, below in southwest and east; wheat and oats below average, having suffered most in northwest, southwest and east. *Kansas*—Independence, blooming, 2nd, peas, 15th, hickory, walnut, 30th, catalpa, 31st, flax. Topeka, 5th, yellow rose in bloom. *Maine*—Cornish, leafing, 3rd, lilac, 10th, birch, maple, poplar, horse chestnut, 11th, forest trees. West Waterville, in bloom, 15th, plum, cherry, 21st, apples. Gardiner, in bloom, 28th, lilac; season more forward than last year. *Maryland*—Emory Grove, in bloom, 20th, rose, 30th, potato; in head, 12th, wheat, 15th, rye; 28th, strawberries ripe; 30th, corn up. *Massachusetts*—Somerset, in bloom, 1st, wild flowers and feverbush, 10th, cherry, 13th, pear, 14th, peach, plum, 17th, apple, 19th, lilac, 24th, quince, 1st, blue violet, cowslip, adder's tongue, anemone, 10th, columbine, 15th, buttercup, 20th, solomon's seal; 6th, asparagus for table use; 30th, rye in head. Fall River, in bloom, 6th, cherry, 8th, peach, 9th, pear, 12th, strawberry, 14th, apple. Westborough, in bloom, 11th, cherry, 12th, peach, 14th, apple. Springfield, in bloom, 12th, peach, plum, 13th, pear. Rowe, 28th, apple in bloom. Waltham, in bloom, 2nd, red maple, 6th, willow, 8th, marigold, dandelion, 10th, anemone, 12th, cherry, 13th, shad bush, white birch, 14th, peach, pear, 16th, gooseberry, blueberry, 17th, sassafras, 18th, apple, 20th, black oak, chokeberry, 21st, lilac, horse chestnut, 25th, buttercup, wild geranium, 29th, barberry, white thorn, 30th, blackberry, 31st, sweet viburnum, black cherry; leafing, 5th, black cherry, choke cherry, barberry, willow, meadow sweet, and sweet viburnum, 8th, horse chestnut, sugar maple, 10th, pear, white thorn, 11th, apple, 12th, white birch, 13th, red oak, red maple, 14th, raspberry, gooseberry, 24th, forest trees. New Bedford, leafing, 2nd, lilac, willow, 19th, elm, oak; in bloom, 2nd, anemone, 5th, magnolia, 6th, wild strawberry, 8th, peach, 12th, pear, buttercup, 15th, apple, 18th, lily of the valley, 19th, dogwood, 25th, solomon's seal; ripe, 2nd, asparagus. *Michigan*—Litchfield, all small fruit prosperous. Northport, in bloom, 16th, early cherry, 17th, shadbush, plum, wild cherry. Thornville, in bloom, 8th, juneberry, 9th, cherry, peach, 11th, plum, 12th, poplar; leafing, 2nd, elm, willow, apple, 6th, wild cherry, whitethorn, 12th, white oak. *Hudson*, 1st, cherry in bloom. *Mississippi*—Brookhaven, in bloom, 1st, magnolia, 7th, lily; 3rd, lily budding; 17th, blackberry ripe. Fayette, in bloom, 7th, black walnut, morning glory; 20th, may apple ripe. *Missouri*—Oregon, in bloom, 1st, indian turnip, morning glory, shellbark, hickory, black walnut, 2nd, blue larkspur, 3rd, persian lilac, 5th, sweet shrub, 6th, snowballs, horse radish, 8th, white walnut, 9th, pear, 10th, blue grass, wild cress, sage, 11th, star of bethlehem, yellow locust, 12th, flowering locust, 13th, red and yellow raspberries, 14th, doolittle raspberry, 15th, wild blackberry, 16th, orchard grass, 17th, brandywine raspberry, 18th, rose peony, red clover, 19th, clinton grapes, 20th, solomon's seal, beauty of hebron, early rose potato, 21st, thyme, 22nd, philadelphus, 24th, syringa, curled cress, parsnip, 26th, radish, canada victor tomato, 27th, rose, scarlet phlox, wild buckwheat, 28th, calistgea, white larkspur, 24th, dogwood, dwarf prairie rose, 30th, may weed; 2nd, blue grass heading; 4th, wild strawberry begins to ripen; 14th, farmers cultivating corn; 17th, strawberry begins to ripen. 31st, blue grass seed begins to ripen. *Nebraska*—Clear Creek, 13th, farmers planting corn. *New Hampshire*—Dunbarton, 26th, apple in bloom; season very backward. Contoocookville, in bloom,

3rd, red maple, 17th, wild strawberry, 24th, apple; leafing, 12th, elm, apple, 27th, concord grape. *New Jersey*—Princeton, in bloom, 4th, cherry, 11th, apple. Atco, in bloom, 6th, apple, 14th, quince; 6th, oak leafing; 22nd, rye heading; 23rd, strawberry ripe. Flushing, in bloom, 5th, peach, cherry, 6th, plum, apple, pear, 16th, lilac; 12th, trees generally in full leaf. *New York*—Argyle, in bloom, 16th, dandelion. Vernon Centre, in bloom, 5th, willow; budding, 5th, apple, pear, 14th, cherry. Palermo, in bloom, 3rd, soft maple, 14th, cherry, flowering currant, 15th, pear, strawberry, 16th, apple, 17th, tulip, flowering almond, 21st, black alder, 22nd, butternut, lilac; 2nd, began to sow oats; 7th, forest trees leafing; 22nd, began planting corn. Starkey, in bloom, 5th, dandelion, 10th, strawberry, 12th, cherry, 13th, lilac, 16th, pear, peach, 31st, clover; leafing, 2nd, currant, 3rd, cherry, 8th, apple, 15th, oak, elm, hickory; 25th, rye heading. Nile, leafing, 10th, forest trees, apple. Waterbury, in bloom, 9th, dandelion, 13th, plum, cherry, peach, 14th, pear, 17th, apple. *North Carolina*—Weldon, 31st, mouth remarkably favorable for crops; cotton never looked better. Fayetteville, in bloom, 17th, magnolia; 22nd, raspberries ripe; 31st, early wheat ready to cut; 5th, strawberry and green pea ripe. *Ohio*—Ruggles, in bloom, 9th, cherry, peach, 12th, apple. Margaretta, in bloom, 5th, cherry, 7th, peach, 9th, pear, apple, wild plum, 12th, lilac. Jacksonburg, 6th, quince in bloom. Cleveland, in bloom, 16th, horse-chestnut, lily. Ringgold, 11th, corn doing very poorly; oats, potatoes, tobacco very backward; grass, fruit and wheat crops short. North Lewisburg, fair yield of fruit in prospect. Bellefontaine, 11th, apples in bloom, nineteen days later than last year; 14th, corn planting. *Pennsylvania*—Hulmesville, crops very promising. Litchfield, in bloom, 14th, cherry, peach, plum, 23rd, apple. *Tennessee*—Chattanooga, in bloom, 5th, strawberry, 8th, Wisteria. *Texas*—Mesquite, early wheat cut on the 6th, but nearly all eaten by birds; wheat birds left on the 15th; they were more numerous, staid longer, and did more damage than ever before; 29th, chinch bug in wheat. Corsicana, 31st, cotton blooming. Indianola, crops backward. *Vermont*—West Charlotte, leafing, 3rd, gooseberry, flowering ash, 14th, forest trees; in bloom, 13th, tulip, 14th, cherry, 17th, plum, pear, peach. Woodstock, in bloom, 18th, plum. Lunenburg, in bloom, 15th, plum, 23rd, apple. Strafford, in bloom, 15th, cherry, plum, 21st, apple. *Virginia*—Johnsontown in bloom, 4th, dogwood, 12th, rice. Dover Mines, 12th, wheat heading. Walnut Grove, ripening, 22nd, wild strawberry; 24th, locust in bloom. Wytheville, 31st, oats, grass, wheat, below the average. *Wisconsin*—Embarras, in bloom, 7th, dandelion, wild plum, 10th, fleur de lis, 13th, apple, 15th, strawberry. Madison, in bloom, 3rd, cherry, 5th, strawberry.

BIRDS.—*Bluebirds*—Pilot Point, Tex., 16th. *Bluejays*—Creswell, Kan., 1st. *Bobolinks*—Southington, Conn., 15th; Elmira, Ill., 4th; Monticello, Ia., 21st; West Waterville, Me., 12th; Rowe, Mass., 10th; Waltham, Mass., 10th; Contoocookville, N. H., 8th; Nile, N. Y., 11th; Vernon Centre, N. Y., 9th; Palermo, N. Y., 9th; North Valley, N. Y., 12th; Waterburg, N. Y., 5th; Norwalk, Ohio, 7th; West Charlotte, Vt., 12th; Woodstock, Vt., 10th; New London, Conn., 10th; New Bedford, Mass., 8th. *Bobwhites*—New London, Conn., 16th. *Brants*—Plattsburgh, Neb., 7th. *Catbirds*—Southington, Conn., 7th; Elmira, Ill., 7th; Emory Grove, Md., 9th; Waltham, Mass., 2nd; Palermo, N. Y., 26th; New London, Conn., 8th; New Bedford, Mass., 2nd. *Cuckoos*—Elmira, Ill., 29th; Northport, Mich., 29th; Vernon Centre, N. Y., 14th; Embarras, Wis., 22nd. *Ducks*—Monticello, Ia., 5th. *Wild Geese*—Plattsburgh, Neb., 7th, a month later than usual; Winremucca, Nev., 12th; Bismarck, D. T., 26th; New London, Conn., 4th. *Hummingbirds*—Monticello, Ia., 28th; Emory Grove, Md., 7th; Fallston, Md., 7th; Litchfield, Mass., 10th; Vernon Centre, N. Y., 10th; Palermo, N. Y., 16th; Norwalk, Ohio, 24th; West Charlotte, Vt., 13th; Woodstock, Vt., 13th; Dover Mines, Va., 14th; Embarras, Wis., 19th; New London, Conn., 2nd. *Kingbirds*—Southington, Conn., 6th; Monticello, Ia., 11th; Rowe, Mass., 4th; Northport, Mich., 13th; Plattsburgh, Neb., 6th; Palermo, N. Y., 9th; Waterburg, N. Y., 12th; West Charlotte, Vt., 15th; Embarras, Wis., 13th; New London, Conn., 8th. *Ladybirds*—Oregon, Mo., 5th. *Martins*—Creswell, Kan., 8th; Emory Grove, Md., 9th. *Mockingbirds*—Embarras, Wis., 1st; Creswell, Kan., 6th. *Nighthawks*—Southington, Conn., 15th; Monticello, Ia., 18th; Creswell, Kan., 22nd; Emory Grove, Md., 27th; Waterburg, N. Y., 28th; Fayetteville, N. C., 15th; Woodstock, Vt., 15th; Dover Mines, Va., 7th. *Orioles*—Rowe, Mass., 12th; Waltham, Mass., 6th; Litchfield, Mass., 11th; West Charlotte, Vt., 12th; Southington, Conn., 8th; Vernon Centre, N. Y., 9th; Palermo, N. Y., 10th; New London, Conn., 10th; New Bedford, Mass., 8th. *Orchard Orioles*—North Volney, N. Y., 11th. *Phoebes*—Northport, Michigan, 19th. *Pigeons*—Pembina, Dak., 13th. *Quails*—Emory Grove, Md., 3rd. *Redbirds*—North Volney, N. Y., 10th. *Ricebirds*—Corsicana, Tex., 9th. *Robins*—Springfield, Mass., 10th. *Golden Robins*—Monticello, Ia., 5th. *Swallows*—Fort Adams, R. I., 27th; Southington, Conn., 1st; Monticello, Ia., 4th; Emory Grove, Md., 1st; Nile, N. Y., 11th; Coalville, Utah, 13th; Pembina, Dak., 3rd. *Barnswallows*—Northport, Mich., 16th; Argyle, N. Y., 5th; Woodstock, Vt., 4th. *Cherry-swallows*—Monticello, Ia., 10th. *Chimney-swallows*—Northport, Mich., 9th; Woodstock, Vt., 9th. *Thrushes*—Waltham, Mass., 15th. *Wheatbirds*—Mesquite, Tex., 2nd. *Whippoorwill*—Monticello, Ia., 26th; Cresco, Ia., 1st; Waltham, Mass., 5th; Northport, Mich., 17th; Nirvana, Mich., 4th; Clear Creek, Neb., 16th; Contoocookville, N. H., 4th; Palermo, N. Y., 12th; North Volney, N. Y., 12th; Litchfield, Pa., 12th; Yankton, Dak., 9th. *Woodpeckers*—Emory Grove, Md., 1st. *Red-headed Woodpeckers*—Northport, Mich., 11th. *Wrens*—Oregon, Mo., 1st; Palermo, N. Y., 9th; Norwalk, Ohio, 2nd. *Yellowbirds*—Northport, Mich., 20th; Oregon, Mo., 11th; Palermo, N. Y., 12th.

FISH.—New London, Conn., 2nd, shad in market; Flushing, N. Y., 14th, first bass caught.

MISCELLANEOUS.—*Grasshoppers*—Salt Lake City, Utah, 23rd, numerous; Pilot Point, Tex., native grasshoppers very thick on prairie; Breckenridge, Minn., 28th; Wellington, Kan., 17th; Emory Grove, Md., 1st, 4th, 22nd to 31st; Contoocookville, N. H., 24th; Bellefontaine, Ohio, 11th. *Seventeen-year lo-*

crusts—Leavenworth, Kan., Independence, Kan., 24th; Oregon, Mo., 12th; Plattsmouth, Neb., 27th, in large numbers. *Butterfly*—New London, Conn., 6th. *Nettleworm butterfly*—New London, Conn., 8th. *Colorado beetle*—New London, Conn., 14th. *Fireflies*—St. Meinrad's, Ind., 12th; Monticello, Ia., 29th; Independence, Kan., 4th; Fallston, Md., 25th; Oregon, Mo., 22nd; Clear Creek, Neb., 25th; Linden, N. J., 30th; Waterbury, N. Y., 31st; Argyle, N. Y., 25th; Bethel, Ohio, 18th; Jacksonburg, Ohio, 20th; Austin, Tenn., 5th; Woodstock, Vt., 29th; Dover Mines, Va., 18th. *Humblebees*—Monticello, Ia., 2nd; Emory Grove, Md., 1st; Northport, Mich., 9th; Vernon Centre, N. Y., 10th; Palermo, N. Y., 10th; Woodstock, Vt., 11th. *Dragon fly*—Monticello, Ia., 3rd. *Snakes*—Monticello, Ia., 5th; Emory Grove, Md., 3rd; Northport, Mich., 15th. *Beetle*—Monticello, Ia., 9th. *Tree toad*—Monticello, Ia., 30th; Oregon, Mo., 20th; Palermo, N. Y., 12th. *Potato bug*—Emory Grove, Md., 7th, 9th, 20th to 31st; Litchfield, Mich., 11th, abundant; Mendon, Mass., 31st; Fall River, Mass., 17th; Springfield, Mass., 17th, numerous; Contoocookville, N. H., 30th; Freehold, N. J., 23rd, more abundant than last year; Vineland, N. J., 31st; Palermo, N. Y., 20th; Waterbury, N. Y., 22nd; Strafford, Vt., 21st. *Ground squirrels*—Emory Grove, Md., 9th. *Honey bee*—Emory Grove, Md., 25th, 29th, 30th, swarming; Jacksonburg, Ohio, 25th, swarming. *House fly*—Emory Grove, Md., 7th; Clear Creek, Neb., 26th; Woodstock, Vt., 31st. *Spotted adder*—Northport, Mich., 15th. *May bugs*—Oregon, Mo., 8th, 9th, 10th; Vernon Centre, N. Y., 10th. *Crickets*—Oregon, Mo., 23rd; Contoocookville, N. H., 24th; West Charlotte, Vt., 25th. *Frogs*—Clear Creek, Neb., 17th; West Charlotte, Vt., 14th; Contoocookville, N. H., 4th. *Mosquitoes*—Flushing, N. Y., 13th. *Wasps*—Norwalk, Ohio, 8th. *Tadpoles*—Oregon, Mo., 1st, hatching. *Bats*—Monticello, Ia., 4th; Emory Grove, Md., 4th.

Meteors.—New Orleans, La., 4th, 7:55 p. m., observed in eastern sky, brilliant green color, fell from an altitude of 30° deflecting to the north, path marked by train of reddish-yellow light. St. Marks, Fla., 4th, 8:30 p. m., large and brilliant meteor in SW., "at an altitude of 5°; it was preceded by a hissing noise and detonated the moment it was seen, presenting the appearance of a roman candle, being visible about 3 seconds." Cairo, Ill., 26th, 8:45 p. m., started from SW. of great bear, altitude of 50° moved from N. to S., resembled a brilliant ball 5 in. in diameter, with train of light 18 in. long. Indianapolis, Ind., 7th, 24th, 25th. Springfield, Ill., 23rd, 24th, 26th, 27th. Holton, Kan., 17th. Topeka, Kan., 16th. Woodstock, Md., 10th, 11th, 13th, 14th, 20th, 21st, 23rd. Emory Grove, Md., 12th. Rowe, Mass., 13th. Near Fayette, Miss., 14th, 21st, 24th, 25th. Hector, N. Y., 7th. Fayetteville, N. C., 24th. Bethel, Ohio, 5th. Jacksonburg, Ohio, 20th, 21st, 23rd. Princeton, N. J., 29th. Prof. G. Hinrichs reports a "brilliant meteor in the northwest at 5 p. m. of the 10th; detonations of extreme violence marked the end of its path over Dickinson and Emmet Cos., which were heard over a hundred miles in every direction. Two large meteorites, of the class *syssideres* have thus far been found, weighing 460 and 150 lbs. respectively.

Polar Bands.—New Corydon, Ind., 6th, 16th, 20th, 24th, 25th, 26th, 31st. Guttenburg, Iowa, 17th. Gardiner, Me., 4th, 7th, 30th, 31st. Clear Creek, Neb., 26th. Freehold, N. J., 26th. Bellefontaine, Ohio, 17th. Woodstock, Va., 17th. Wytheville, Va., 1st, 6th, 21st, 22nd.

Prairie and Forest Fires.—Bismarck, D. T., 14th. Burlington, Vt., 26th. Morgantown, W. Va., 5th and 6th, on mountains. Yankton, Dak., 5th, E. and W. of station, 14th. Georgetown, Col., 20th, extensive. Creswell, Kan., 1st to 5th, 18th to 20th. Independence, Kan., 1st to 31st. Emory Grove, Md., 12th to 28th, great damage to property, several lives lost. Oregon, Mo., 7th, 8th. Freehold, N. J., 10th. Atco, N. J., 9th. Starkey, N. Y., 12th. Litchfield, Pa., 8th to 16th, in every direction doing much damage to timberland. Catawissa, Pa., 9th to 16th. Wellsboro, Pa., 5th to 14th, extensive. Wytheville, Va., 1st, 10th, 11th, 12th. Embarass, Wis., 30th, destroying 300 acres of timber.

Mirage.—Olivet, Dak., 6th, 11th, 18th, 20th, 26th. Breckenridge, Minn., 1st. New London, Conn., 8th, 9th. New Haven, Conn., 15th.

Zodiacal Light.—Southington, Conn., 8th, 10th, 11th. Monticello, Ia., 15th, 16th, 20th. Cambridge, Mass., regular, looked for at 8 p. m.; seen on 8th only; clouds and moonlight hindered observations earlier in month than afterwards. Waterburg, N. Y., 8th. Bellefontaine, Ohio, 22nd. Wytheville, Va., 8th, 9th.

Earthquakes.—Princeton, Cal., 26th, 8:40 p. m., slight shocks. U. S. Naval Hospital, Yokohama, Japan, March 16, 1879, 9:32 p. m., shock; 18th, 9:49 a. m., light shock.

Sunsets.—The characteristics of the sky at sunset, as indicative of fair or foul weather, for the succeeding twenty-four hours, have been observed at all Signal Corps stations. Reports from 131 stations show 4,034 observations to have been made, of which 53 were reported doubtful; of the remainder, 3,354 or 84.2 per cent. were followed by the expected weather.

Sun Spots.—The following record of observations, made by D. P. Todd, Assistant, has been forwarded by Prof. S. Newcomb, U. S. Navy, Superintendent Nautical Almanac, Washington, D. C.:

DATE— May, 1879.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		REMARKS.
	Groups	Spots	Groups	Spots	Groups	Spots	Groups	Spots	
6th, 5 p. m.	1	1	0	0	1	1	1	1	Faculae.
7th, 3 p. m.	0	2	0	0	0	2	1	3	Faculae.
5 p. m.	0	0	0	0	0	0	1	3	Faculae.
8th, 3 p. m.	0	1	0	0	0	1	1	4	Faculae.
9th, 2 p. m.	0	0	0	0	0	0	1	4	Faculae.
15th, 4 p. m.	0	0	0	0	0	0	1	4	Veiled spots of faculae.
16th, 5 p. m.	0	0	0	0	0	0	1	4	Veiled spots in large groups of faculae.
20th, 2 p. m.	0	0			0	0	0	0	

On the 1st, at 4 p. m., 3rd, at 3 and 5 p. m., 5th, at 2 p. m., 21st, at 2 p. m., 22nd, at 2 p. m., 23rd, at 2 p. m., 24th, at 2 and 4 p. m., 25th, at 5 p. m., 27th, at 4 p. m., 28th, at 2 p. m., 29th, at 2 and 4 p. m., 30th, at 2 p. m., and 31st, at 2 p. m., observations were made, but no spots seen. Mr. W. Dawson, of Spiceland, Ind., reports having observed the sun every day, with the following results: No spots on the 1st, 4th, 5th, 6th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 27th, 28th, 30th, 31st. On the 2nd, two groups of one and four spots; 7th, one group, four spots; 8th, one group, twelve spots, and prominent faculae near east point; 9th, one group, eleven spots, one spot near the faculae of yesterday; 10th, one group, nine spots; 11th, one group, nine spots; 12th, one group, four spots; and on the 13th, the group had dwindled to one little spot. Mr. David Trowbridge, Waterburg, N. Y., examined the sun on 3rd, 5th, 6th, saw no spots; 8th, saw group of two, one large, one small, near eastern margin of disc, brought on by solar rotation; 10th, one spot, faint; 11th, 12th, one spot, faint; 14th, 15th, 17th to 26th, 28th to 31st, none. Mr. H. D. Govey, North Lewisburg, Ohio, observed no spots during month. Prof. G. Hinrichs, Iowa City, Iowa, reports sun's disc "examined on twelve days without seeing a spot."

NOTES AND EXTRACTS.

Mr. Joao Capello writes to *Nature* as follows: "In *Nature* of March 6th, p. 420, in regard to an appreciation of the meteorological observations of the Hydrographic Office at Pola, appears the following: 'The amount of this third maximum is very small, and the evidence yet adduced is not sufficient to determine whether it is a real increase of atmospheric pressure or merely an apparent increase due to undetected instrumental errors.' We remarked this secondary maximum of the barometer in an investigation of the diurnal variations of pressure at Lisbon, before knowing that Mr. Rikatscheff had written a memoir on this subject, and we can affirm that the said maximum is not due to instrumental errors; the examination which we made was of a series of 12 years of hourly observations, taken from a barograph, (photographic system,) and we proved as follows: 1st, Not one of the 12 curves of atmospheric pressure, corresponding to the 12 months of December or the 12 months of January, has failed to show the said secondary maximum between the 13th and 15th hours. 2nd, The values of the average errors in those hours, (13th, 14th, 15th,) are smaller than the probable errors of other hours of the day. 3rd, In grouping the hourly pressures of clear and calm days of January and of December, during the whole series of 12 years, the maximum in question, stands forth more regularly, and is much more developed than in the curves of the mean pressures of the same months. It seems to me that the existence of this secondary maximum, very difficult to explain, and which renders more obscure the explanation of the double diurnal oscillation of the barometer, is demonstrated."

[From *Comptes Rendus*.]

The following extract is taken from a letter of Mr. F. A. Forel: "A cyclonic-hurricane passed over Switzerland during the evening of February 20th, 1879; I find in the study of the phenomena an indirect proof of a gyratory movement of the atmosphere which seems to me very convincing. After a very marked calm which had during the day, (February 20th,) succeeded the southwest wind blowing in our valley since February 16th, suddenly a gale of exceptional violence sprung up. Over a track 12 to 20 kilometres (7.4 to 12.4 miles) wide, the hurricane overturned or carried away tiles and window panes, chimneys and roofs of houses, isolated trees or entire groves, and shipwrecked upon Lake Lemman some fishing boats; the zone of devastation passed quite exactly through Geneva, Lausanne, Fribourg and Berne. Upon two sides of this zone a comparative calm prevailed; squalls from the southwest on the north side of the storm, and *foehn* (southeast wind) in the valley of the Rhone from Martigny to Vevey to the south of the path of the cyclone. The sudden commencement of gale allowed a quite exact measurement of the velocity of its translation. Here are the approximate figures which I have been able to gather:

STATION.	Time of commencement.		Distance from Geneva.		Duration of translation in minutes.	Velocity of translation.	
	hour.	min.	Kilometres.	Miles.		Metres per second.	Miles per hour.
Geneva	5	45	45	26.7	60	14	31.3
Morges	6	35	43	26.7	60	14	31.3
Lausanne	6	45	51	31.7	90	14	31.3
Fribourg	8	10	102	63.4	145	12	26.8
Berne	8	50	129	80.2	185	12	26.8

"We have on the other hand a very exact report of the average velocity of the wind at a given point within the area of the phenomena. The anemometer of the Berne Observatory, of which Prof. A. Förster has very obligingly sent me notes, indicated as the wind's velocity:

INTERVAL FROM—		Kilometres per hour.	Metres per second.	Miles per hour.
5 to 6 P. M.	0	0	0	0
6 7 P. M.	2.8	0.8	0	0
7 8 P. M.	4.2	1.4	1.7	0
8 9 P. M.	73.0	20.0	44.7	0
9 10 P. M.	79.2	22.0	49.2	0
10 11 P. M.	83.5	23.2	51.9	0
11 12 P. M.	80.7	22.4	50.1	0

"Thus, during the storm, the average velocity of the wind at the Berne Observatory was from 20 to 23 metres per second, (44.7 to 51.5 miles per hour,) while the velocity of translation of the gale itself was only from 12 to 14 metres per second, (26.8 to 31.3 miles per hour.) I see in the comparison of these figures evident proof of a relative movement in the phenomena itself, of a partial displacement of air in the middle of the great current of air which moved towards the north-east, and this intense movement could be only a turning movement. The storm of February 20th was then a cyclone, and the devastated zone was the *dangerous side*."

[Note of Mr. E. Nouel, from *Comptes Rendus*.]

"In a note on the theory of hour frost and *verglas*, (frozen rain,) printed in Vol. XI, (1863,) of the *Annuaire de la Société Météorologique de France*, page 26, I showed that the great *verglas* are not due, as is